FX9000P Screen Layout

The FX9000P has a 256 x 128 dot display. It uses it for text and graphics but it is fundamentally a graphics display. Each character position is an 8 x 8 grid of dots. The memory for the screen display is implemented with eight 4044 type static RAM chips. Each of these chips is 4K x 1bit. The memory is addressed in such a way that each RAM chip provides the data for one of the 8 vertical stripes in each character.

A common fault with RAM chips is total failure. In this case the data from one or more devices might appear as either a permanent 1 or a permanent zero. If this happens then the vertical stripe that the RAM chip is responsible for would appear as either a solid green line or a solid white line. As the chip is responsible for that vertical line in all characters these lines will appear across the entire screen. The following image shows the sign on screen for the FX9000P on a machine that has some failed Ram chips.

You can see that the right hand two vertical lines of every character are on, and this is true across all of the display. This indicates that two RAM chips have their Data out signal stuck at 1. If we label the stripes 0 to 7 starting at the far right hand stripe of each character, then this display has stripes 0 and 1 stuck at 1.

The correspondence of stripe number and RAM chip is fixed and is due to the circuitry on the main PCB of the FX9000P. This table shows that correspondence:

IC Reference	Data Bit	Character Stripe
G1	D0	0 (Far right hand)
F1’	D1	1
F1	D2	2
E1	D3	3
D1’	D4	4
D1	D5	5
C1	D6	6
B1’	D7	7 (Far left hand)

From the picture and the table, it can be deduced that the RAM chips that have failed are those in positions G1 and F1’ on the main PCB.